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VINTAGE SOUND ITEMS

THE HORN SPEAKER

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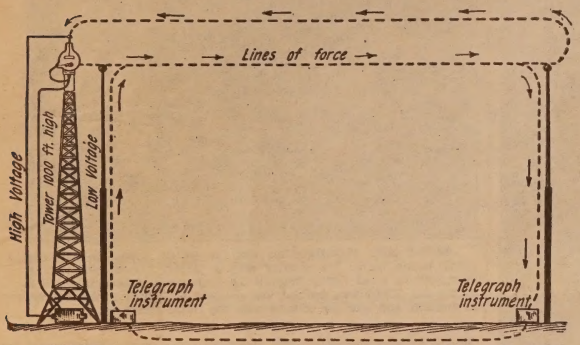
A Three Electrode Tube in 1899?

By D. C. WILKERSON

Another page of radio history which is exceedingly interesting if only for the reason that the system suggested is parallel in principle of operation to the vacuum tube of today.



A copy of the original sketch of Dr. Pratt's system of signaling without wires. The upper atmosphere was to act as the conducting medium for the X-Rays, the return circuit to be through the earth. This system could be compared to a huge vacuum tube; the principle of operation is similar.

WITH the courts of the United States jammed with legal proceeding of all sorts, injunctions, damage suits, patent litigation and suits for recovery, the radio business is suffering from a somewhat uncertain patent basis. Many manufacturers are disinclined to hazard the manufacture of any radio accessories whatsoever on account of it, and the producers of complete sets are in a similar predicament.

The question of the three electrode tube now being discussed throughout the radio trade, and also in the United States and other courts is one of the most involved subjects in the radio field.

DeForest was supposed to be the originator of the device when he added the grid to the old two electrode tube brought out by Dr. Fleming. Armstrong claimed the origin of the discovery of regeneration and Meissner and Langmuir also filed patent claims on the same idea.

The history of the radio art in the United States is a colorful one, and in its entire length, from the days of the early 1860 experiments of the Washington, D. C. dentist Loomis, up to the present day, there have been constant arguments as to the men entitled to the proper credit for the inventions related to the development of the radio art.

There is a matter of public record of a three electrode radio tube transmission system which was proposed to send signals from Chicago to New York, in 1899. This device was supposed to be directional in its transmission, and it had the advantage that it actually did function at short distances.

The device referred to, is the one brought out by the eminent Dr. H. P. Pratt, noted Chicago scientist, who has been interested and engaged in the problems of signal transmission for over 40 years.

It consisted of a tube constructed in the manner of the X-ray tube of the early non-filament type, and its secondary circuit was intended to take a potential of from 2,000,000 to 5,000,000 volts. At the time there were no accurate means of determining such high voltages, and even today, the measuring of such high electrical pressures is only approximate, so the calculation of the Pratt secondary voltage was of a guesswork character.

This tube developed a cathode stream, from a source of emission, which was to be modulated by a magnetic device operated from a low voltage source. This means of modulation, please note, is included in the first DeForest patent, where he desired to modulate the current of electrons from the source of emission to the collector electrode by exactly the same means.

Another interesting feature of the Pratt transmission system was the means for collecting the energy at the receiving end. He desired to use a tall mast with a large metal ball affixed to the top, properly connected to the ground through recording instruments.

This X-ray method of transmission can be appreciated when we consider the interference set up by the average X-ray tube of today in the reception of radio programs. Especially is this annoying in metropolitan districts where dental and surgical laboratories are in continuous operation each day. Surely, a source of such heavy interference could certainly operate as a radio transmitter.

These experiments were carried on at South Bend, and in Chicago, in conjunction with tests parallel to the work with the Marconi System. It is noteworthy, also, that the scientists of that day realized the universal dispersion accompanying the transmission of radio signals, and turned their endeavors towards accumulating the transmission of energy in a directional manner to avoid waste and to attain a degree of secrecy.

That this Pratt system was designed to transmit telephone as well as telegraph signals is noteworthy, and this development shows itself to be one of the eddy currents set up by the ambitious Bell, in scientific waters, when he actually performed the feat of telephoning down a beam of light, so many years ago. Bell modulated a beam of light with the current flowing in a microphone circuit, and Pratt proposed to do the same with the X-ray discharge.

In this system, however, the third electrode was placed outside of the tube containing the emitter of electrons, and the collector plate was placed 1,000 miles away, connected by a common ground, the earth itself.

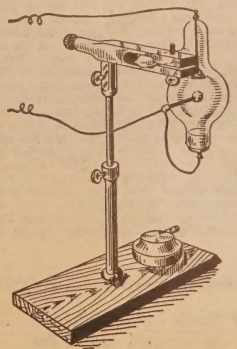
Regarding this Pratt device in the light of the present day vacuum tube, containing three electrodes, one would have to consider the whole area located between Chicago and New York as the electrostatic field between the grid and plate electrodes. In other words, Pratt was trying to set up a vacuum tube source of electronic emission in Chicago, modulate the stream from outside the tube, and put his plate *1000 miles away in New York.* The fallacy of that, in the light of present day knowledge, is that the ionization collision caused by the many gaseous molecules in the atmosphere would rob the electron stream of so much energy, that its effect would be lost within a few feet, or fractions of a mile from the transmitting station.

At that, Dr. Pratt recognized that he had to get into rarer atmosphere approaching a vacuous condition, and he thought rightly enough that the higher he went into the air, the rarer it would be, and, therefore, the greater the range of his signals.

The system which was designed to transmit signals from Chicago to New York was never installed on the scale projected, but the fact remains that in this experimental work a vacuum vessel, having a source of electron emission, a collector plate and a means for modulating this electron stream, was devised.

The world owes a debt of gratitude to these hardy, early experimenters who supplied the groundwork for the marvelous development of the radio art of today, and who have furnished such a splendid basis for the more marvelous achievements of tomorrow, which are beyond our comprehension at the present time.

No credit is subtracted from DeForest or from any of the others who have been instrumental in taking the Bunsen burner electrode device of 25 years ago, and transforming it into the efficient, reliable vacuum tube of the present day.



A copy of Dr. Pratt's original sketch of his X-Ray tube and mounting, originally printed in the "Chicago Daily News" in the year 1899.

Extract from the Chicago Daily News for Wednesday, April 19, 1899

PHONE LINE WITHOUT WIRE

Dr. H. P. Pratt of Chicago evolves a plan to go a step farther than wireless telegraphy.

WOULD MAKE USE OF THE X-RAY

Plan of sending messages through the air from this city to New York explained.—Lofty towers would be needed.

Accounts of the experiments at South Bend with the Marconi system of wireless telegraphy, published in the Daily News, have aroused the keenest interest among Chicago electrical experimenters, and one of them, Dr. H. P. Pratt of the Masonic Temple, believes he has devised a plan for both telegraphing and telephoning without the use of wires.

Dr. Pratt, who was formerly one of the electricians for the American Bell Telephone Co. and a manufacturer of electrical apparatus, is now connected with three local medical colleges as professor of electrotherapeutics. His specialty is the X-ray machine and the production of shadowgraphs and it is through the X-rays that he claims to have solved the problem upon which Marconi and the Notre Dame professors are now at work.

The preceding article, which itself is 67 years old, about the colorful history of radio is from *Radio News*, 1924. The news item below, a nice glance back in history of Armstrong, is from another 1924 article out of the old magazine, *Radio Age*.

Armstrong's Radio Muffler

THE other day Major Edwin H. Armstrong visited the office of the Chief Supervisor of Radio in Washington. The Major has cut loose from radio for a while and with his wife is en route south in his machine, where he plans a month's vacation and honeymoon in Florida.

Future activities of the major, it is understood, will be devoted to a large extent in remedying interference troubles said to be caused by his famous regenerative circuit. A large amount of the difficulty encountered, it is believed, is due to poor manipulation, but he suggests the use of an additional tube of radio frequency, as a "muffler." Just as in automobiles where excess noises are eliminated by the use of an engine muffler, in the operation of the regenerative sets, a radio muffler can be incorporated. One exception is noted; in the automobile the muffler is placed after the engine, behind it, so to speak, while in a radio set the "muffler" should be put in front or before the regeneration.

Jack Benny's Climb to Peak of Fame

FRIEND TELLS OF BOYHOOD OF ACE OF RADIO

Young Benny Spent Time in Sinykin's Store When He Was Sent Home From School; Friendship Continues.

By GLADYS PRIDDY

"Every time he was in trouble or sent home from school, he used to come to the store and spend the time with me—and that was often." Thus Julius Sinykin recalls the beginning of his friendship with Jack Benny. It was 30 years ago. Benny was still doing readin', writin' and 'rithmetic at Central school when he wasn't fiddling here or there, and Sinykin was working at the Columbia Clothing store on Washington st.

"I used to be in amateur shows then," Sinykin said, "and Jack would sometimes play. When he wasn't playing, he'd come back stage with me. I was in different plays at the Barrison theatre, (that's the Rialto now), and then I was in a sketch for awhile.

"Cora Salisbury played the piano at the Barrison, and she thought Benny—we called him Benny then—was pretty good on that fiddle of his. So she teamed up with him, and they went on the road. Benny was about 17 then, I think. They did all right until Miss Salisbury's mother took sick, and she had to come home."

Remembered Friend

While they were away, however, Benny never forgot a postal card or a letter for his friend in Waukegan. All of his press notices came back to Sinykin, and those early bits of publicity as well as all of the later and longer stories are in Sinykin's scrap book. It's quite a volume now.

"I always heard from him. When his folks didn't get a letter, his mother'd come down to the store to see me. She knew I could always tell her where Benny was."

After the first partnership ended, Benny found another pianist, this time a fellow from Chicago named Woods. Billed as Benny and Woods, the pair embarked upon a vaudeville career that was successful until the war overtook it. While traveling, Benny always wired his friend Sinykin each time Chicago was the next stop on the circuit. Sinykin went to meet him and usually saw him off. Today, Julius Sinykin went again to meet Benny, but he doesn't know just how many times he has gone to Chicago to do that. This meeting is rather a special event for Waukegan, but for Sinykin, going to the city to meet his friend is now a regular thing. Benny never comes to Chicago without wiring ahead to Sinykin, and the Waukegan haberdasher always gets there to meet the train.

Joins the Navy

When Benny gave up vaudeville to enter the service, he came to Waukegan. As usual, he went to see his old friend, and together they went down to Great Lakes to enlist the young actor. Benny joined the navy as a musician. "When his superior officer discovered that," Sinykin recollects, "he didn't like it much. You see, Benny couldn't play anything but the fiddle, and the officer had no use for that!"

The vaudevillian went into training. "I remember the last time I saw him down at the station. It was on a hot Wednesday afternoon. Benny went marching by holding a flute, just holding it. He couldn't play the thing!"

After the parade, Sinykin found a pretty much disgusted and woe-begone Benny. "If you don't get me out of this, I'll die," moaned the young man, and thereby sang the theme song of probably all the other chaps in training camps from Hollywood to Long Island.

"Well, I was pretty well acquainted down at Great Lakes at that time," Benny's friend went on, "so I told him I'd try to see if anything could be done. I knew the Admiral and Mrs. William A. Moffett. Mrs. Moffett was at the head of the navy relief. At that time, the navy relief was booking entertainers for the big relief show. Benny was transferred to the east. Then he was happy. He stayed in the Great Lakes revue, and he went from city to city with it for the duration of the war.

Starts Patter

"It was in this show that he first began to speak lines. Before, he just played his fiddle. Oh, and he met a fellow in the show, Zez Comfry was his name. He's done right well for himself since. But then, he was just a struggling young piano player. He and Benny decided to team up once they got out of the navy. Well, after the war, Benny was mustered out all right, but Zez seemed to be there for keeps," Sinykin said.

"After waiting around a while for Zez, I said to Benny one day, 'Now is the time for you to go out on your own'."

Benny took that advice. He fixed up an act for himself, and booked out on his past reputation. The skit, a monolog with bits of violin playing, made good.

"Well, Ben Benny began to attract attention," Sinykin recalled. "In fact, he began to be so popular that folks got him mixed up with another chap, Ben Bernie. This caused quite a little confusion. Bernie had been in the field longer, so there was only one thing to do. Ben Benny became Jack Benny. That was about 1920."

Shortly after changing his name, Jack had his first big break in a Schubert show. Following that, he was offered a contract by MGM and went to Hollywood. Things were fine. A good salary and nothing to do all day but play golf, so went life for Jack Benny in Hollywood. Apparently this chap Benny is a little "unusual." Anyhow one bright day he wired Sinykin to meet him in Chicago.

Quits Easy Job

"Maybe I've made a mistake," his friend quotes Jack as saying as soon as he alighted from the train, "maybe I've made a mistake, but I was fed up with playing golf and doing nothing, so I went to the manager and asked to be released from my contract."

MGM released Benny. The manager told him they were sorry to lose him, but if that was the way Benny felt it was all right. And so, Mr. Jack Benny walked out on a good salary, California sunshine and a daily golf game.

"You see, Jack was afraid to stay away from New York too long," Sinykin explained. "He didn't want to play so much golf and take so many sun baths that everyone would forget he was, after all, an entertainer. He wanted to work at his job. I told him I thought he'd done the right thing. That's a funny thing about Jack—, always he seems to know the right thing to do. He just has a hunch, and he's always right. He was like that when he was a kid, too. Even when other people didn't agree with him, usually it came out that Jack was right."

Back in New York, Jack Benny was lucky. In Chicago he had told his friend that he thought Earl Carroll would make him an offer for a spot in the Vanities. "A telegram for me may come to your place," Jack had said to Sinykin. Sure enough, after Sinykin had put Jack on the train for New York and had returned to Waukegan, there was the wire from Earl Carroll. Jack Benny went on in the big show.

Fell for Mary

After a successful season in New York, the Vanities came to Chicago. "When Jack was on the way to New York," Sinykin recalled, "he was telling me about a beautiful girl he had met in Hollywood. Her name was Mary Marks, and Jack did a lot of talking about how wonderful she was.

"Well, she had a married sister in vaudeville, and that sister along with her husband was playing Chicago at the same time Jack was in town with the Vanities. Miss Marks came out from the West to visit her sister and brother-in-law and things began to happen.

(See page 4)

PLAYING "THE BEE"—Here is Jack when he started thrilling audiences with the intricacies of "The Bee," and possibly one or two other pieces. This was before he started using patter and jokes along with his violin playing.

BENNY AND WOODS—This was the second vaudeville team in which Benny toured the country with a pianist named Woods. The team split up when Benny dropped the stage work to become a sailor during the World war, but he was destined to return to the boards, in uniform, and tour the country with the Naval Relief show.

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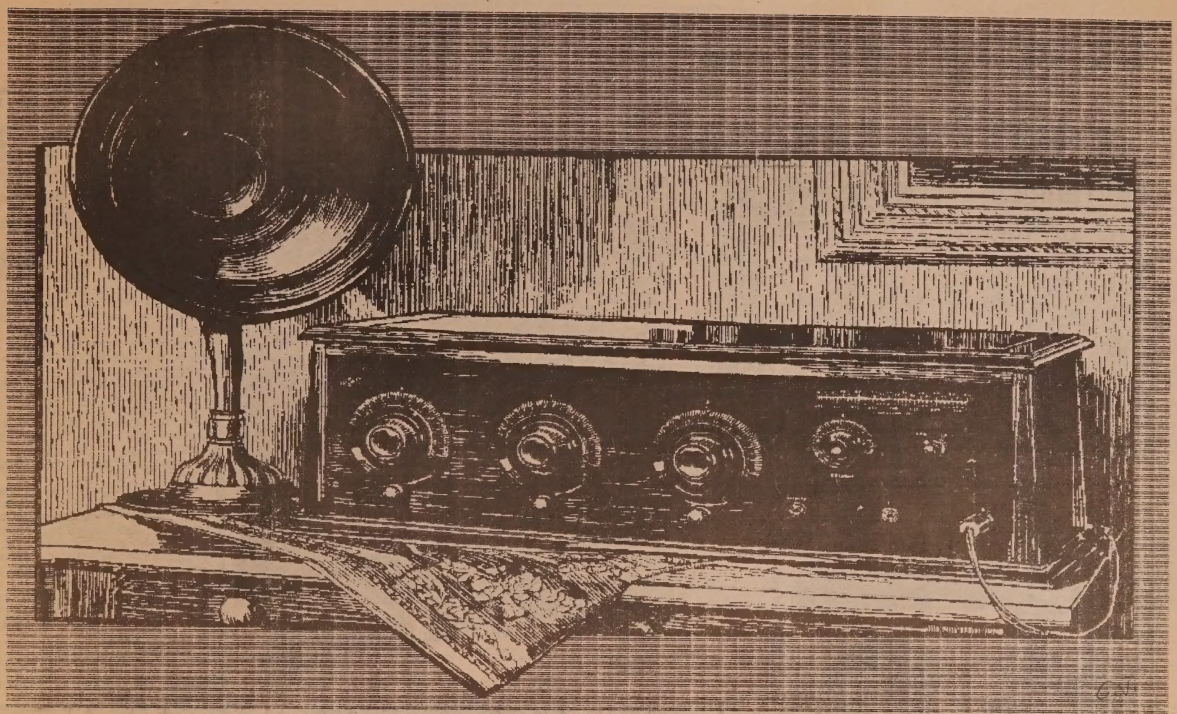


Pfanstiehl model 7 radio ...1924

(Advertisement)

Build-It-Yourself Kit Makes AM-Band

Phonograph Oscillator

by Tom Tompkins

It's a lot of fun restoring those old console radios, and even more enjoyable to sit in front of one and hear that rich sound from what is seldom smaller than a ten-inch speaker. Trouble is, in this neck of the woods there aren't any radio stations offering anything earlier than 1950's rock 'n roll, which just doesn't fit the quiet elegance of yesteryear's radio. That is exactly the reason I developed my own miniature AM broadcaster, through which I might play that wonderful music from years gone by.

You old-timers will probably recall the days when one or two-tube "wireless phonographs" were in vogue as an accessory to the parlor radio. Connected to a crystal pickup, these handy devices allowed one to play 78 rpm records through a nearby radio without any connecting wires! The wireless phonograph oscillator was simply tuned in on its own frequency, just like any radio station would be. Imagine having a similar broadcaster today, over which you could play the vintage music, comedy and drama available not only on records, but cassette tapes and compact discs, as well!

Just such an instrument is my Model PO-3T phonograph oscillator, now available to fellow radio enthusiasts in kit form. Just like in the old days, it can be used to play your choice of old-time memories through a vintage AM radio. Unlike the power-hungry broadcasters of old, mine will transmit for many hours on an ordinary 9-volt battery, and can even be used in a vintage automobile! A unique 3-transistor circuit provides excellent fidelity and easy adjustment of transmitting frequency and modulation level.

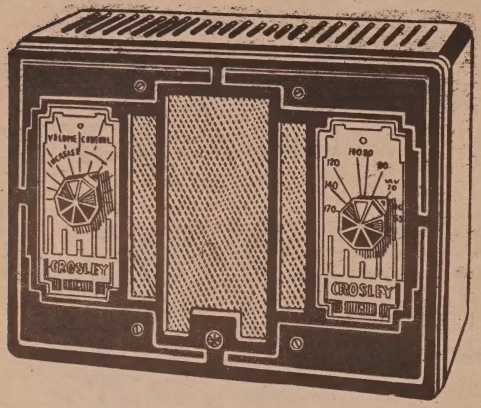
The kit comes complete with printed-circuit board, antenna wire, audio input jack, battery connector and all components. Assembly is easy, generally requiring less than an hour. Detailed instructions are provided so that the kit may be put together even by those unfamiliar with solid-state electronics. The only tools required are a "pencil"-type soldering iron, pliers and wire cutters.

Designed with Part 15 of the FCC rules in mind, the Model PO-3T will radiate a strong signal to radios up to 12' away. It is not intended to broadcast throughout the house, or to the neighbors.

Kits are available from me at Metco Electronics, P. O. Box 549, Shelburne, VT 05482. The price is $19.95 plus $3 P & H. Vermont residents should add 80¢ sales tax to their orders.

THE CROSLEY FORTY-ONE

All Crosley radios on this page are 1934.



THE CROSLEY FIVER

BENNY

"On a Sunday Jack called me and told me he wanted to bring Mary to Waukegan. They came to visit me at my apartment in the Clayton hotel. The following Friday, he called me and he said, 'I've asked Mary to be my wife, and we want to be married in your apartment.' That was Jan. 14, 1927. Well, they came out and were married. Then we all went to Chicago for dinner that night and after dinner, I took Mary to the show. Jack couldn't. He was in it."

And so began the partnership of Jack Benny and Mary Livingstone. After the Carroll show closed, Jack went back into vaudeville. He decided then to use Mary for a stooge, and she has worked with him ever since. Before appearing with her husband, she had had no previous experience on the stage.

Following a brief return to vaudeville, Jack went on the air. He has had contract with Canada Dry, Chevrolet, General Tires and finally General Foods, that is, Jello. As a radio star he is now famous, and, of course, he stars occasionally in pictures.

"Yes," said Sinykin, as he leaned over a show case full of neckties, dollar ones, "I always meet the train everytime Jack comes to Chicago. I hear from him regularly. If he doesn't write, he calls up. In other words, Jack hasn't changed any, even if he is a success."

And Sinykin smiled at the prospect of meeting again today the chap who "used to sit around the old store on Washington st."

THE WAUKEGAN NEWS-SUN
TUESDAY, MARCH 23, 1937.

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"I have a complaint. I can't put the damned thing down! I read it last night on the sofa, then on in bed and gave up around midnight. I read it at breakfast, then took time out to be NC on the Pacific Amateur Radio Guild, where I extolled the virtues of QTC" Ken Johnson, W6NKE

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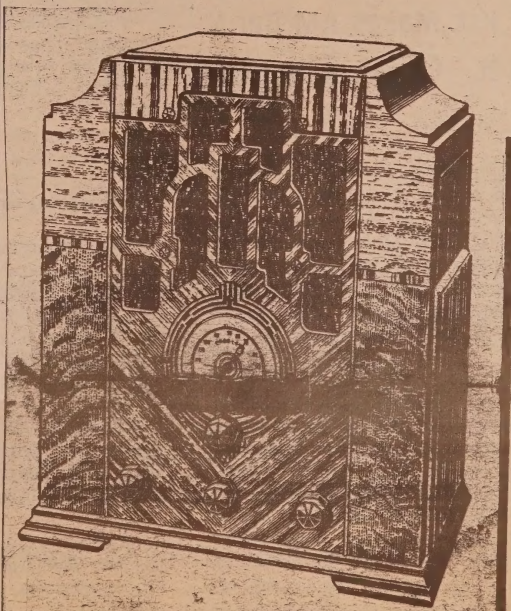

The Crosley SIXTY-ONE

Thanks to all readers for their patience in our trying to learn our new computer systems. Last July lightning ruined our old system and caused all kinds of problems in getting out THE HORN SPEAKER. We hope to catch up soon.

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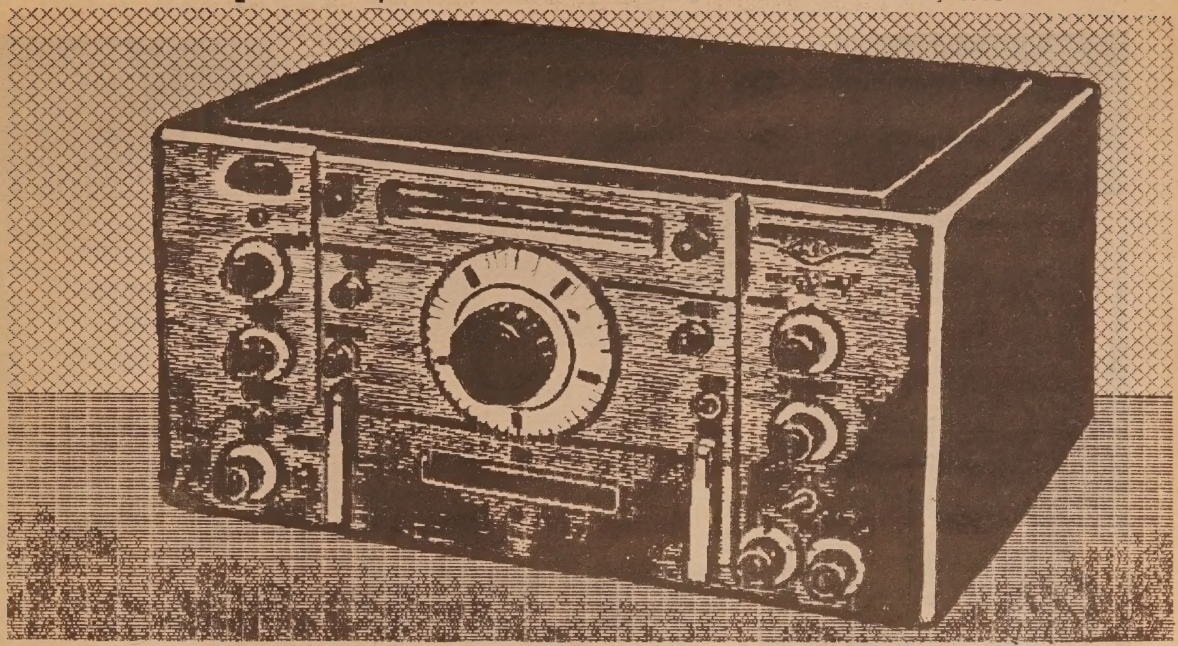

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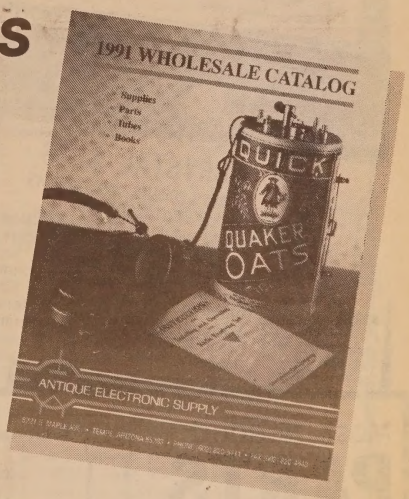

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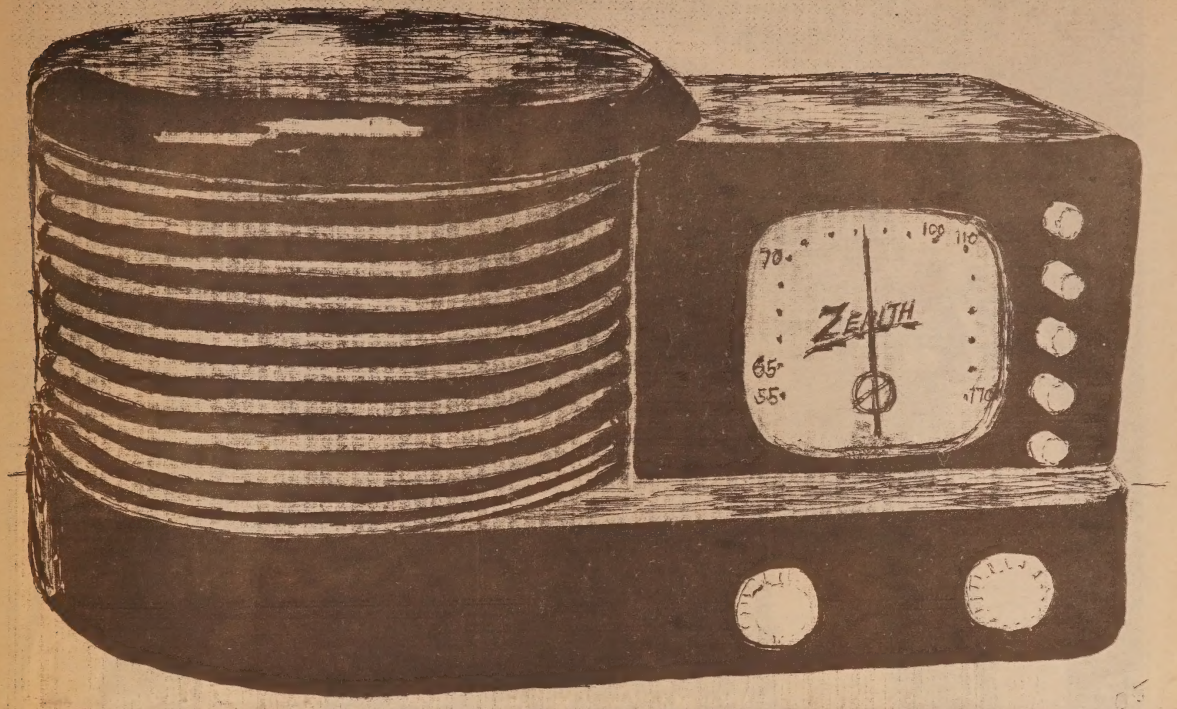

Zenith 5-R-312 ... 1938

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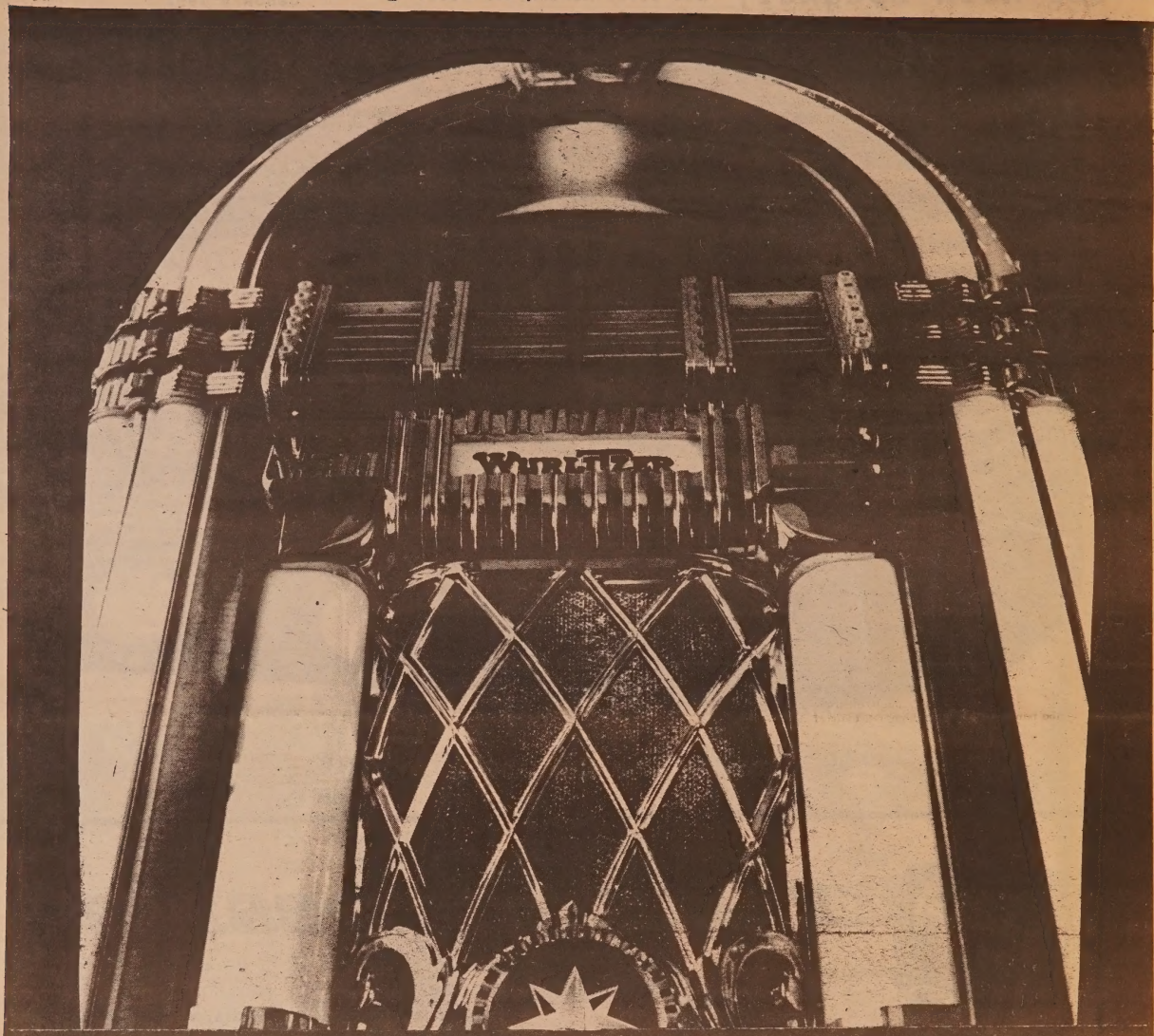


Something to look up to is the 1946 Wurlitzer model 1015 juke box, recognized as the juke box.

Paul Fuller, an immigrant from switzerland who learned much about American design from a Sears, Roebuck catalog while working on a Montana ranch, designed the striking juke boxes that came after translucent plastic was introduced.

Even though Seeburg came out with the plastic designs in 1938, Wurlitzer along with Rock Ola wasted no time getting Fuller to start designing juke boxes. Fuller was placed in a special enclosure to keep out industrial spies. Anyway, the 1015 is a good sample that came out of this period.

NEW YORK, APRIL 5, 1879.

NEW ACOUSTIC APPARATUS.

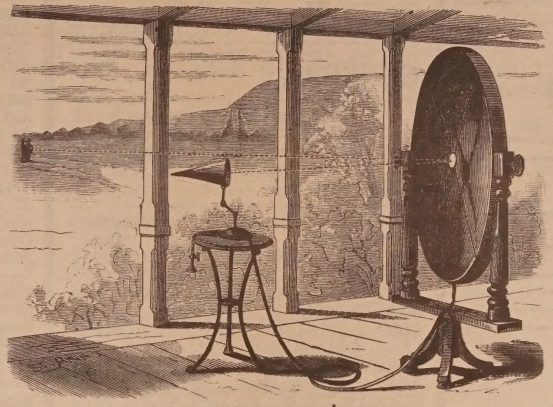
BY GEO. M. HOPKINS.

The analogy between sound and light is in many respects remarkable; they are both wave motions, governed by similar laws, and may be illustrated in the same way. Both may be reflected, refracted, condensed, or diffused by similar means. The particular action of sound to be dealt with here is that of reflection, examples of which are presented in every echo; and whispering galleries are but the exhibition of the same thing, although more rare. A few of them have a world-wide reputation.

In his article on sound in the "Encyclopædia Metropolitana," Sir John Herschel mentions the abbey church of St. Albans, where the tick of a watch may be heard from one end of the edifice to the other. In Gloucester Cathedral a gallery, of octagonal form conveys a whisper 75 feet across the nave. In the whispering gallery of St. Paul's the faintest sound is conveyed from one side of the dome to the other, but is not heard at any intermediate point. The dome of the capitol at Washington is an excellent whispering gallery. These effects are due to an accidental arrangement of the walls.

Sails of ships are sometimes inflated by the wind so that they act as concentrating reflectors of sound. Arnott says that in coasting off Brazil he heard the bells of San Salvador from a distance of 110 miles, by standing before the mainsail, which happened at the time to assume the form of a concave reflector, focusing at his ear.

Sounds may be received and conveyed by means of metallic parabolic reflectors, so that many times the volume of sound that naturally strikes the ear will be concentrated, rendering audible sounds that might otherwise be too distant or too faint to be heard. Such reflectors of necessity have a fixed focus, and are available under certain conditions only. The accompanying engravings represent a form of sound reflector that may be focused as readily and directed as easily as a telescope. It is, in fact, a portable and adjustable whispering gallery, having many useful applications.



ACOUSTIC APPARATUS. Fig. 2.

These will be hinted at further on. The instrument is very simple, consisting essentially of an airtight drum, one head of which is rigid, the other elastic. This drum, or, more properly, reflector, is mounted on pivots in a swiveled support, and is provided with a flexible tube having a mouthpiece and stop cock at its free end. Two wires are stretched across the face of the reflector at right angles to each other, and support at their intersection a small plane mirror, the office of which is to determine the position of the reflector in relation to the direction of the sound. A small ear trumpet or funnel, which is shown on the table, is used in connection with the reflector, to increase its effect by gathering a portion of the sound that might escape the unaided ear.

The reflector is adjusted by looking through the ear trumpet toward the small plane mirror, and moving the sound reflector until the source of sound is seen in the mirror. The reflector is then focused by exhausting the air from behind the flexible head until the required degree of concavity is reached, which will be when sounds are distinctly heard in the ear trumpet. The air is readily exhausted from the reflector by applying the mouth to the mouthpiece.

The details of the construction of the apparatus will be seen in Fig. 2. The larger engraving clearly shows the manner of using. The lady sitting at the table hears in the trumpet what is said in the boat on the lake in the distance, and it is not impossible that the voyagers may hear from the sails of their boat what is said on the porch. Of course the operation of the instrument may be reversed—that is, sounds made at the focus of the reflector may be projected in parallel lines over long distances, but in practice a speaking trumpet is found to be better for this purpose. The engraving shows but one of the applications of the reflector. It would be a simple matter to provide for a deaf person an instrument on this principle. It could hang on the walls of the parlor unnoticed, as it might take the form of a richly framed picture, and would concentrate a great volume of sound at a single point. The same device may also be applied to an auditorium to project the voice of the speaker in any required direction.

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